

ABSTRACT

The present invention aims to overcome the drawback with conventional RFID tag devices having a short communication range, and expand the communication range to several times or more that in the conventional scheme. The conventional scheme is based on equilibrium feeding/equilibrium modulation (a two-terminal circuit for antenna operation), whereas the present invention is based on disequilibrium feeding/equilibrium modulation (a three-terminal circuit for antenna operation). The conventional scheme is based on simple rectification of received RF signals, whereas the present invention employs a circuit based on a combination of a stub resonance-based, impedance transformation boosting scheme and a ladder boosting scheme. The conventional scheme is based on ASK or BPSK modulation, whereas the present invention is based on passive modulation, but can employ a QPSK modulation circuit.